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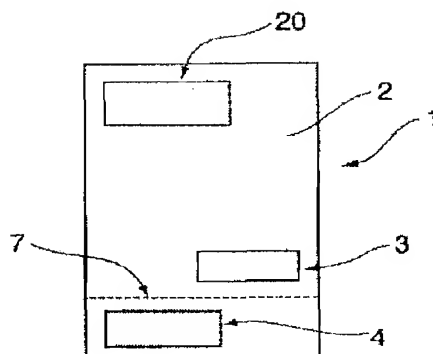
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(54) **DATA RECORDING MEDIUM**

(57) Abstract:

PROBLEM TO BE SOLVED: To provide a data recording medium having encoded data which can be decoded as desired data and is recognizable when it is superposed.

SOLUTION: In the data recording medium having encoded data decoded as desired data when superposed to be made recognizable, encoded data are formed to a plurality of encoded data forming parts 3 and 4 arranged to a part of a base material 2 in a positionally separated state and a separation part 7 for separating the base material is formed between these encoded data forming parts and an inspection part 20 making faithful reproduction by copying difficult is formed to the other part of the base material and, after the base material is separated, the separated base materials are mutually registered to be superposed one upon another to decode the desired data in the encoded data forming parts.



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DETAILED DESCRIPTION

[Detailed Description of the Invention]

[0001]

[Field of the Invention]This invention is an information recording medium which information not to be known enciphers in addition to authorized personnel, such as lottery information, a password, and personal information, and has been recorded.

It is related with information recording media which have a verification part which cannot perform faithful reappearance even if especially a copying machine copies, such as a lottery ticket and a personal information recording card.

[0002]

[Description of the Prior Art]Conventionally, in addition to authorized personnel, such as lottery information, a password, and personal information, there are information recording media with which information not to be known is recorded, such as a lot, a password request, and a personal information recording card. The device of it enabling it to check the contents of information, only when authorized personnel are required for these information recording media, or a copy being made not to be obtained easily is variously made from a viewpoint of forgery prevention or the prevention from an alteration, and is used in various fields.

[0003]There is a measure against the unjust copy and forgery which used the copying machine in many of these measures. As an example, the information on an information recording medium is enciphered and there is the method of recording that it is faithfully unreproducible even if it copies this encipherment information with a light-colored information storage material. However, by this method, since encipherment information is light color, there is a fault of being very hard to recognize the information which manifests itself when it is going to pile up and decode encipherment information. When making desired information decode, it will double in the guide of the dragonfly etc. which have been given on the outskirts, but since the color of a guide is light, there is also a fault that aim doubling is difficult. If a copy is photographed with a color copier, and sensitivity is standard conditions, a copy will become lighter than a genuine article and it will turn out that it is copied, but if the sensitivity of a copying machine is raised, a deep color will reappear, and it will become very near a genuine article.

[0004]Size of the pixel which constitutes the enciphered information as other measures against the unjust copy and forgery which use a copying machine is made smaller than the size which can reproduce a copying machine, and the art which it kept from the ability of to carry out copy reappearance also has the encipherment information which is the aggregate. however, in such art, since the pixel which constitutes encipherment information is very small, when it became thin, and the color of the encipherment information which is those aggregates doubles aim and lays encipherment information on top of the whole, it is decoded -- I will come out -- the cognition of information -- dramatically -- butter fish -- ** -- there is a fault to say.

[0005]

[Problem(s) to be Solved by the Invention]When this invention was made in view of the above situations, encipher, and information not to be known is made inherent in addition to authorized personnel and authorized personnel need, it is an information recording medium with which decode simple, and the information content views and it enables it to have checked it. Especially the purpose is offer of the information recording medium kept faithful reappearance from being possible of, when it is easy to carry out cognition of the information on the request decoded and a copying machine moreover copies.

[0006]

[Means for Solving the Problem] This invention is made in order to attain the above-mentioned purpose, and an invention of claim 1, If it piles up, have formed encipherment information in two or more encipherment information formation parts which are the information recording media which are inherent in encipherment information which is decoded as desired information and may be recognized, detach a position in a part on a substrate and are arranged, respectively, and. While having formed a separation part for separating a substrate among these encipherment information formation parts, After having formed a verification part with faithful reappearance difficult for other portions on a substrate by copy and separating a substrate by said separation part, when aim is doubled and the separated substrates are piled up, it is an information recording medium, wherein desired information is decoded in an encipherment information formation part.

[0007] An invention of claim 2 is the information recording medium according to claim 1, wherein at least one of the encipherment information formation parts of a substrate has the transparency which is a grade which can check encipherment information located in the lower part when making information decode.

[0008] Invention of claim 3 of encipherment information is black, and when making desired information decode, encipherment information located in the lower part is claim 1 having provided on a white concealing layer thru/or the information recording medium according to claim 2 further again.

[0009] When an invention of claim 4 makes desired information decode, encipherment information located in the lower part is claim 1 reflectance is higher than information storage material of encipherment information located in the upper part, and having formed thru/or the information recording medium according to claim 3 further again.

[0010] In an invention of claim 5, a verification part consists of a latent image part and a non-latent image part, and moreover, constitute each from a topography child from whom a size differs, and further again. In a size which cannot be copied in a copying machine, one topography child of each topography child. a size which the topography child of another side can copy with a copying machine -- and latent image parts and non-latent image parts which consist of these topography children are claim 1 having arranged in the state where it is mutually undistinguishable visually thru/or the information recording medium according to claim 4.

[0011] In an invention of claim 6, a verification part consists of a latent image part and a non-latent image part, and moreover, constitute each from 10,000 lines by which small-gage wires in which thickness differs gather, and further again. One 10,000 lines are small-gage wires of thickness which can be copied with a copying machine, and latent image parts and non-latent image parts which constitute 10,000 lines of another side from a small-gage wire of thickness which cannot be copied with a copying machine, and consist of these 10,000 lines are claim 1 having arranged in the state where it is mutually undistinguishable visually thru/or the information recording medium according to claim 4.

[0012] In an invention of claim 7, a verification part consists of a latent image part and a non-latent image part, and, moreover, constitute each from 10,000 lines, and further again. Latent image parts and non-latent image parts which the direction of a small-gage wire which constitutes these 10,000 lines each accomplishes 45 degrees mutually, and moreover consist of these 10,000 lines are claim 1 having arranged in the state where it is mutually undistinguishable visually thru/or the information recording medium according to claim 4.

[0013] Inventions of claim 8 are claim 1 currently having formed a verification part with information storage material from which hue differs with an angle to see thru/or the information recording medium according to claim 7 further again.

[0014] Inventions of claim 9 are claim 1 currently having formed a verification part with information storage material containing a fluorescent substance thru/or the information recording medium according to claim 7 further again.

[0015] Inventions of claim 10 are claim 1 currently having formed a verification part with information storage material from which hue changes with heating or cooling thru/or the information recording medium according to claim 7 further again.

[0016] Inventions of claim 11 are claim 1 currently having formed a verification part by information storage reproduced by hue changing with copies thru/or the information recording medium according to claim 7 further again.

[0017]

[Embodiment of the Invention] Next, although an embodiment of the invention is described, this invention is not limited to these.

[0018] The outline of the information recording medium 1 by one embodiment of this invention is shown in

drawing 1. The situation when decoding the desired information 11 by the encipherment information which is inherent in the information recording medium 1 shown in drawing 1 is shown in drawing 2. on the other hand, drawing 3 should show the principle of decoding by encipherment information, and the encipherment information 5 and 6 provided in each of the encipherment information formation parts 3 and 4 and such encipherment information should pile it up -- the situation of decoding of the information 11 boiled and depended is shown. [0019]If the information recording medium 1 is piled up, desired information is [the encipherment information which may be decoded and recognized] inherent, and it fundamentally, First, if it lays on top of each of the encipherment information formation parts 3 and 4 which detach a position to the part on the substrate 2, and are arranged to it, the encipherment information 5 and 6 which desired information is decoded and may be recognized is formed, and the separation part 7 is formed so that these encipherment information formation parts 3 and 4 can be separated. And the verification part 20 with faithful reappearance difficult for other portions on the substrate 2 by copy is formed. (Refer to drawing 1 thru/or drawing 3)

[0020]The encipherment information 5 and the encipherment information 6 are formed in each of the encipherment information formation part 3 and the encipherment information formation part 4 as shown in drawing 3. to these encipherment information 5 and 6 and its periphery, the contents of information cannot recognize at a glance in this example -- as -- a design -- thin -- the camouflage information, including a crest etc., 8 and 9 is given. Since it expands and has expressed typically in a of drawing 3, are drawing so that the contents of each encipherment information 5 and 6 may be understood, but. in the lot etc. which are actually created, camouflage information is constituted, for example -- thin, if each dot of a crest is set to 200 thru/or about 300 dpi by halftone dot conversion and combination, such as hue of camouflage information and encipherment information, brightness, and chroma saturation, is chosen suitably, As each encipherment information formation part is shown in a of drawing 1 or drawing 2, visually, encipherment information is not recognized.

[0021]What is necessary is for the separation part 7 to have separated the substrate 2 first (refer to a of drawing 2), and for while to have separated into the next, and to double aim and just to lay substrate 2b on top of another substrate 2a, as shown in drawing 2 when making desired information decode. as that is right, then it is shown in b of drawing 2, or drawing 3, the expected information 11 of "EB" comes to be decoded and recognized.

[0022]In the example of a graphic display, only when the information needed piles up the encipherment information 5 and 6, in order to make it recognized in the contents even if a part of encipherment information is recognized, a problem in particular is not generated. That is, even if the information appropriate for "3" which the encipherment information formation parts 3 and 4 have become some formed parts of the lottery information of a lot in the example shown in drawing 3, and has been formed in the encipherment information formation parts 3 and 4 even if, "3", "1", and "1" is known, it is satisfactory in any way. It is because it is "EB" which the true lottery information in this lot is decoded when aim is doubled and the encipherment information formation part 4 is laid on top of the encipherment information formation part 3, as shown in b of drawing 2, or b of drawing 3, and is recognized.

[0023]When it is going to pile up encipherment information formation parts so that those who expected that there was probably such structure may get to know lottery information before casting lots, some substrates must be made to separate by the separation part 7 first. Since the separation part 7 cannot be returned to the state where origin unified again if it makes a substrate separate in the portion, when the above unfair operation is carried out, it will become clear that the trace will certainly remain and carried out unfair operation.

[0024]Therefore, the encipherment information formation parts 3 and 4 are arranged in a position which is not made unless it comes out, after decoding by the encipherment information 5 and 6 currently formed there separates the substrate 2 by the separation part 7.

[0025]In this invention, the verification part 20 kept faithful reappearance from being possible of even if the copying machine copied to some other substrates 2 further is formed. Therefore, when a copying machine copies the information recording medium 1 which formed this verification part 20, the copy 1a which reappeared except the verification part 20 and separation part 7 faithfully will be obtained. Drawing 4 shows the state at this time. In the copy 1a, when the verification part 20 of the information recording medium 1 used as the manuscript was not able to reappear faithfully, the latent image part which constitutes a part of verification part 20 can distinguish now from the non-latent image part located on the outskirts, and the information of "copy strict prohibition" has appeared.

[0026]Drawing 5 thru/or drawing 7 expand and show a part of verification part 20. If each verification part shown

in these copies, the character "KO" will appear it. Each verification part shown here comprises a latent image part and a non-latent image part. In drawing 5, the latent image part "KO" is a topography child of the size which can be copied with a copying machine, the non-latent image part of the circumference of it comprises a topography child of the size which cannot be copied with a copying machine, and, visually, the latent image part and non-latent image part which consist of these topography children are arranged in the state of being mutually undistinguishable.

[0027]With [the composition of the verification part 20] the above composition, on a copy, a latent image part and a non-latent image part are recognized independently, and the character "KO" comes to appear by that it becomes impossible for the topography child who constitutes a non-latent image part to copy and reproduce (it becomes impossible to reappear faithfully).

[0028]A latent image part and a non-latent image part may consist of 10,000 lines which are the aggregates of the small-gage wire of not the topography child that consists of a dot of various shape, such as a round head, a triangle, a rectangular head, or diversification, but the linear shape arranged to parallel state, or the shape of a wavy line. As shown in drawing 6, the latent image parts "KO" are specifically 10,000 lines which consist of small-gage wires of thickness reproducible with a copying machine, Visually, the latent image part and non-latent image part which form the non-latent image part of the circumference of it by 10,000 lines which consist of small-gage wires of thickness unreproducible with a copying machine, and consist of these 10,000 lines are arranged in the state of being mutually undistinguishable. By using this appearance, the image of "KO" which it becomes impossible for 10,000 lines which constitute a non-latent image part from on a copy to have reproduced faithfully, and has not been recognized on a manuscript will appear on a copy.

[0029]When it constitutes the latent image part and non-latent image part of a verification part from 10,000 lines, visually, the ** part and non-latent image part which change and set up the direction of the small-gage wire which constitutes each 10,000 line besides the above mentioned, and consist of these 10,000 lines may be arranged in the state where it cannot distinguish mutually. (Refer to drawing 7)

When a copying machine copies a small-gage wire, a difference appears in how a copy is carried out by the angle of the small-gage wire to the scanning direction of a copying machine. Generally, if the small-gage wire is set up in the direction right-angled to a scanning direction, it will be copied clearly. In setting out of the other angle, it is not copied clearly. Then, the small-gage wire which one side of the small-gage wire which constitutes 10,000 lines of the latent image part of a verification part and a non-latent image part, for example is made to become right-angled or parallel to the scanning direction of a copying machine, and constitutes 10,000 lines of another side so that it may become a different angle from this, For example, if it is set as 45 degrees, respectively, a difference appears in the reproducibility of the small-gage wire in a latent image part and a non-latent image part, and on a copy, the information which both came to be distinguished on the copy and have not recognized in the verification part on a manuscript will appear, and will come to be recognized.

[0030]As mentioned above, although the example of the combination of the pattern which constitutes a verification part was introduced as a means for keeping faithful reappearance from being possible with a copying machine in a verification part, There is also a method prevent a verification part from reproducing faithfully by choosing suitably information storage materials, such as not the thing limited to this but ink which forms a verification part, and a toner, and carrying out them. How to form a verification part in the ink called OVI (Optical Variable Ink) ink from which hue specifically changes with the angles to see, Or the method of forming a verification part with the information storage material containing the fluorescent substance which emits light in the infrared light from which fluorescence or wavelength differs when light will be emitted in fluorescence if it irradiates with ultraviolet rays, or it irradiates with infrared light, Since it has from red the method of forming a verification part with the information storage material from which hue furthermore changes with heating or cooling, and the unique spectral characteristic in an infrared region further again, on a copy, the method of forming a verification part with the information storage material which will be reproduced unlike the hue of a manuscript, etc. are employable.

[0031]On the other hand, when at least one side of the encipherment information formation part of a substrate makes information decode, it needs to have the transparency which is a grade which can check the encipherment information located in the lower part. Therefore, the plastic film which comprises polyester transparent as a substrate or translucent, VCM/PVC, polypropylene, etc., or an encryption formation part is selectively applied to the rarefaction or the translucent-ized synthetic paper, tracing paper, etc. The thickness is bent with the moderate rigidity about 50-200-micron meter, and has the characteristic.

[0032]on the encipherment information 5 and the encipherment information 6 and on the outskirts of it, those

existence and contents are abolished more from a part -- as -- a design -- thin -- what is necessary is just to establish the camouflage information 8 and 9 which comprises topography children, such as a crest, if necessary. The record method in particular of the information storage material which forms each of these information, or information is not limited, and should just choose a proper thing from general-purpose information means forming, such as information storage materials, such as printer's ink and thermal recording ink, offset printing, silk printing, gravure printing, thermal recording, for example.

[0033]As for the encipherment information located in the lower part, when supposing that encipherment information is black and making desired information decode when recording encipherment information, providing on a white concealing layer is preferred. If it has such composition, it can recognize more clearly by contrast with decoded high information.

[0034]It may be made to form **** of encipherment information which encipherment information makes it pile each other up, and sometimes come to be located at the lower part with information storage material with high reflectance so that decoding of desired information can recognize more clearly.

[0035]The substrate at the time of making desired information decode makes it pile each other up, and order in particular is not limited. Therefore, what is necessary is just to choose suitably consideration of the visibility (transparency) over formation of the encipherment information which comprises the above-mentioned information storage material with high concealing layer and reflectance, and lower information [in / further / an encipherment information formation part] in consideration of the turn of superposition of the substrate at the time of information decoding.

[0036]

[Effect of the Invention]Since this invention is above, some substrates are separated and decoding of encipherment information is attained by easy operation of uniting and piling up aim, in encipherment information formation parts. In order must separate the substrate when decoding information, a trace when it decodes unjustly certainly remains, and the existence of unjust operation comes to be known. Since the portion which makes a faithful copy difficult further again, and the portion which makes coding information decode were made to separate, A part of encipherment information is formed in light color, it becomes easy to carry out aim **** at the time of decoding compared with this kind of the former formed with the topography child and small-gage wire of a size and thickness unreproducible with a copying machine of information recording medium, and decoded data come to be recognized clearly.

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CLAIMS

[Claim(s)]

[Claim 1]If it piles up, have formed encipherment information in two or more encipherment information formation parts which are the information recording media which are inherent in encipherment information which is decoded as desired information and may be recognized, detach a position in a part on a substrate and are arranged, respectively, and. While having formed a separation part for separating a substrate among these encipherment information formation parts, An information recording medium which will be characterized by decoding desired information in an encipherment information formation part if aim is doubled and the separated substrates are piled up after having formed a verification part with faithful reappearance difficult for other portions on a substrate by copy and separating a substrate by said separation part.

[Claim 2]The information recording medium according to claim 1, wherein at least one of the encipherment information formation parts of a substrate has the transparency which is a grade which can check encipherment information located in the lower part when making information decode.

[Claim 3]Claim 1 having established encipherment information located in the lower part when encipherment information is black and desired information is made to decode on a white concealing layer thru/or the information recording medium according to claim 2.

[Claim 4]Claim 1 reflectance of encipherment information located in the lower part when making desired information decode is high, and having formed it rather than information storage material of encipherment information located in the upper part thru/or the information recording medium according to claim 3.

[Claim 5]A verification part consists of a latent image part and a non-latent image part, and moreover, constitute each from a topography child from whom a size differs, and. In a size which cannot be copied in a copying machine, one topography child of each topography child. a size which the topography child of another side can copy with a copying machine -- and claim 1 having arranged a latent image part and a non-latent image part which consist of these topography children in the state where it is mutually undistinguishable visually thru/or the information recording medium according to claim 4.

[Claim 6]A verification part consists of a latent image part and a non-latent image part, and moreover, constitute each from 10,000 lines by which small-gage wires in which thickness differs gather, and. Claim 1 having arranged a latent image part and a non-latent image part which one 10,000 lines are small-gage wires of thickness which can be copied with a copying machine, and constitute 10,000 lines of another side from a small-gage wire of thickness which cannot be copied with a copying machine, and consist of these 10,000 lines in the state where it is mutually undistinguishable visually thru/or the information recording medium according to claim 4.

[Claim 7]A verification part consists of a latent image part and a non-latent image part, and, moreover, constitute each from 10,000 lines, and. Claim 1 having arranged a latent image part and a non-latent image part which the direction of a small-gage wire which constitutes these 10,000 lines each accomplishes 45 degrees mutually, and moreover consist of these 10,000 lines in the state where it is mutually undistinguishable visually thru/or the information recording medium according to claim 4.

[Claim 8]Claim 1 currently having formed a verification part with information storage material from which hue differs with an angle to see thru/or the information recording medium according to claim 7.

[Claim 9]Claim 1 currently having formed a verification part with information storage material containing a fluorescent substance thru/or the information recording medium according to claim 7.

[Claim 10]Claim 1 currently having formed a verification part with information storage material which hue discolors by heating or cooling thru/or the information recording medium according to claim 7.

[Claim 11]Claim 1 currently having formed a verification part with information storage material reproduced by

hue changing with copies thru/or the information recording medium according to claim 7.

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DESCRIPTION OF DRAWINGS

[Brief Description of the Drawings]

[Drawing 1]It is an explanatory view by one embodiment of this invention.

[Drawing 2]It is an explanatory view showing a state when decoding the encipherment information which is inherent in an information recording medium, and the decoded information.

[Drawing 3]It is an explanatory view showing the situation of decoding by the encipherment information provided in each of the encipherment information formation part, and such encipherment information.

[Drawing 4]It is an explanatory view of a copy.

[Drawing 5]It is an explanatory view showing the composition of a verification part.

[Drawing 6]It is an explanatory view showing other composition of a verification part.

[Drawing 7]It is an explanatory view showing the composition of further others of a verification part.

1 1a Information recording medium

2, 2a, and 2b Substrate

3 and 4 Encipherment information formation part

5 and 6 Encipherment information

7 Separation part

8 and 9 Camouflage information

11 Information

20 Verification part

[Translation done.]

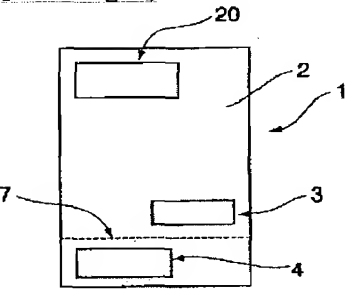
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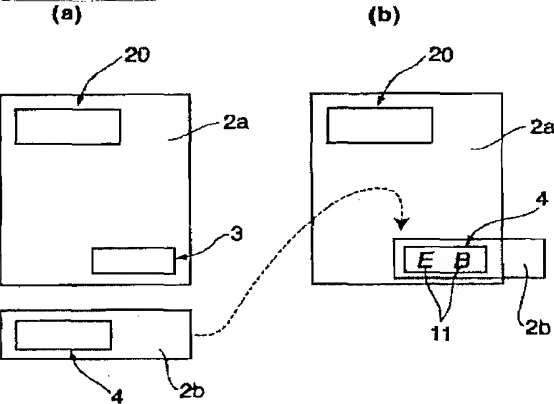
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DRAWINGS

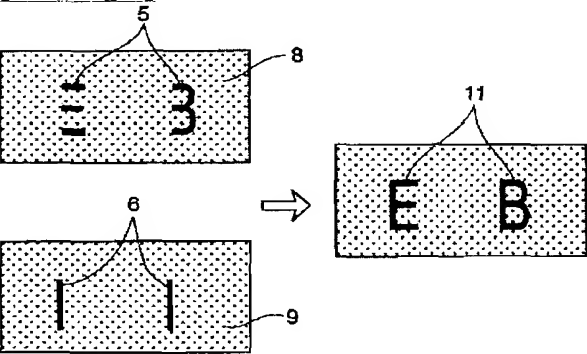
[Drawing 1]



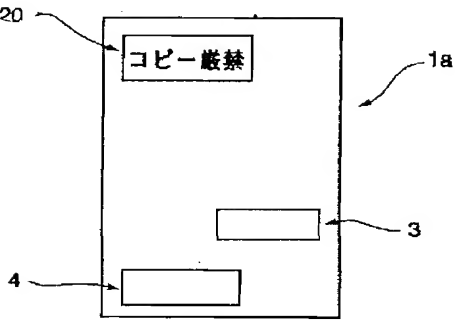
[Drawing 2]
(a) (b)



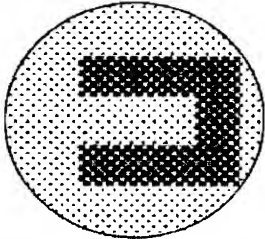
[Drawing 3]



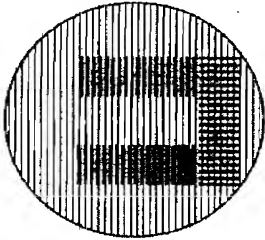
[Drawing 4]



[Drawing 5]



[Drawing 6]



[Drawing 7]

